Annual Index — 1984

(The RECORD was not published in June, July, Sept., Oct., and Dec., 1984)

1.75-micrometer design rules, Apr., 4, 11 105-type aerial cable terminal, Feb., 12-16 132-pin ceramic-pin array, Apr., 4 1984 Summer Olympics, Jan., 7, Mar., 4-11, Apr., 16-17 1A ESS™ switch, Jan., 1, Feb., 17-20, Apr., 1, Aug., 9 1A processor, Feb., 17-20 1ESS and 1A ESS switches, timeout reductions, Jan., 21 1ESS switch, Jan., 21, Apr., 17 256K dynamic random access memory (DRAM), Apr., 2PC2 generic, Nov., 10-15 32-bit microchips, Apr., 4-11 3B computers announced, Mar., 1-2, Apr., 12-20 at Olympics, Mar., 8 described, Mar., 1-2, Apr., 12-20 in cellular system, Apr., 1 maintenance, Nov., 16-21 memory capacity, Apr., 12-15, 19 operating speed, Apr., 12-15, 19 3B Net, Mar., 1-2, Apr., 12, 16-20 3B2 computers, Mar., 1-2, Apr., 12-20 3B20 computers, Mar., 1-2, Apr., 3, 12-20, Nov., 16-21 3B20D computer, Feb., 17-20, Apr., 1, Nov., 16-21 3B20S computer, Jan., 25, Mar., 1, 8 3B5 computers, Mar., 1-2, Apr., 12-20 3PC1 generic, Nov., 15 III-V semiconductors, Mar., 13-19, Nov., 2 \$4.3 million donated for science and engineering education, Mar., 3 48-channel T1C cable, Jan., 3 4ESS switch, Feb., 17-20, 18-22 compatible with BCM32000, Aug., 4-8 5A Remote Switching Module (RSM), Jan., 14, 19 5E2 generic, May, 24 **5ESS** switch administrative services, Jan., 15-16, Feb., 18-19, May, and SLC®-96 system, Apr., 3 BCM32000 compatible, Aug., 4-8 data-base administration, Apr., 26-33 hybrid ICs, Mar., 29 local/toll capability, Jan., 13-19 maintenance, Nov., 16-21 multimodule, Jan., 13-19, Aug., 10-15 remote switching, May 1-2, Aug., 10-15 supports LASS, Aug., 9

5620 Dot-mapped display terminal, Jan., 2

85-type closure, Feb., 14-16 96-channel cable, Jan., 3

Δ

ABS (acrylonitrile-butadiene-styrene), Nov., 8 ACCUNET® digital service, Aug., 5 ACCUNET Reserved 1.5 Service, May, 3 Acrylonitrile-butadiene-styrene (ABS), Nov., 8 Active components, hybrid ICs, Mar., 27-29 Adaptive Differential Pulse Code Modulation (ADPCM), Adleman, Richard, Taking a big bite out of bits, Aug., Administering switching system data, Apr., 26-33 Administrative module, Jan., 13-19, Aug., 11-14 services, 5ESS switch, Jan., 15-16, Feb., 18-19, Apr., 26-33, May, 18-25 ADPCM (Adaptive Differential Pulse Code Modulation), Aug., 5-8 Advanced Telemetry Processor (ATP), Jan., 10 Ahrens, Ranier B., 3B20D computer: maintenance with a mind of its own, Nov., 16-21 Alarm system, remote switching, Aug., 12-15 AMA (Automatic Message Accounting), Jan., 15-16, Feb., 18-19, May, 18-25 American Physical Society (APS) prizes, Jan., 30 AMS (Availability Monitoring System), Mar., 20-24 Analog circuits, remote testing, Nov., 10-14 APD (avalanche photodiode), Mar., 13-19 API (Attached Processor Interface), Feb., 18, 20 Applications software, 3B computers, Apr., 13 APS (American Physical Society) prizes, Jan., 30 APS (Attached Processor System), Feb., 17-20 Architecture 5ESS switch, Jan., 13-19, Aug., 10-15 data-base, Apr., 29-33 microchips, Apr., 4-11 Ash, Gerald R., AT&T carves new routes in its nationwide network, Aug., 18-22 3B computers, Mar., 1-2, Apr., 12-20 (Also see 3B computers.) cellular phone, Nov., 2 cellular systems, Apr., 1-2, Nov., 2

Cellular Telephone-System 1000, Nov., 2

computers, at Olympics, Mar., 8

enters computer business, Apr., 12-20 image capture board, Nov., 3 PC NAPLPS decoder, Nov., 3 video display adapter, Nov., 3 AT&T sets two lightwave records with new ultratransparent fiber, Nov., 3 **AT&T Bell Laboratories** communications science research, Nov., 22-26 donation, Mar., 3 physics research, Apr., 21-25 research, Mar., 13-19, Apr., 21-25, Nov., 22-26 special report, Mar., 3 speech synthesizer chip, Aug., 1, 3 tiny transistor, Aug., 1, 3 Atkins, Robert M., Plasma fireball process speeds lightguide fiber production, Feb., 4-11 Attached Processor Interface (API), Feb., 18-20 Attached Processor System (APS), Feb., 17-20 Automated testing, special services circuits, Nov., 12-14 Trouble Reporting System, Jan., 26 message accounting (AMA), Jan., 15-16, Feb., 18-19, May, 18-25 Trouble Analysis System, Jan., 22 Autoplex™ system, Apr., 1-2 Availability Monitoring System (AMS), Mar., 20-24 Avalanche photodiodes (APDs), Jan., 10-11, Mar., 13-19

Band gap, Mar., 13-19 Bands, valence and conduction, Mar., 14-17 Bardeen, John, Feb., 2 Base-relation tables, Apr., 26-33 BCM32000 bit-compression multiplexing, Aug., 4-8 Beam-leaded chips, Mar., 25-29 Bell Communications Technical Education Center, Bell System Center for Technical Education, Aug., 2 Bell System reference frequency, May, 18 Bell-jar concept for housings, Feb., 14-15 BILLDATS, May, 21 Binding post design, Feb., 13-15 Bipolar transistor, Mar., 18-19 Bit compression multiplexing, Aug., 4-8 Bit robbing, Aug., 5-7 Blue box fraud attempts, Apr., 3 Bonding, Mar., 25-29 BOSH circuit, Mar., 29 Bosik, Barry S., Time-compression multiplexing: squeezing digits through loops, Feb., 21-25 Bovey, Frank A., Exploring the mysteries of macromolecules, Nov., 4-9 Brattain, Walter H., Feb., 2 BRCS (Business and Residence Custom Services), May, 2-3

BRCS offers new services for 5ESS™ switch, May, 2-3 Brickell Avenue Project, Jan., 6-7 Brokenburg, Virginia, May, 1, Aug., 10-11 Bursting, Feb., 22-24 Business and Residence Custom Services (BRCS), May, Business installation and maintenance organizations, Jan., 28 C programming language, Apr., 4, May, 15, 17, Nov., 14 C3 (cleaved coupled-cavity) laser, Jan., 5, 8-9, Mar., 14-16 Cable, Feb., 12-16 Cache memory, Apr., 5 CAD (computer-aided design), Apr., 7-11 Call hold, May, 2 Call Record Assembler (CRA), May, 18 Call transfer, May, 2 CAMA (centralized AMA), Jan., 16, May, 21 Capasso, Federico, New, quieter photodiodes promise to catch speeding lightwaves, Mar., 13-19 CCIS (Common Channel Interoffice Signaling), Aug., 9, 18-22, 24 CCITT (International Telegraph and Telephone Consultative Committee), Aug., 8 Cellular telecommunications systems, Apr., 1-2 Telephone-System 1000, Nov., 2 office, Jan., 1, 3, 7, 13, 18, 21, 25-29, Feb., 21-25, Apr., 2, 26-33, May, 1, 3, 13, 18-25, Aug., 2, 10-17, Nov., 10-15 office terminal (COT) bank, Apr., 3 processing unit (CPU), for AT&T 3B computers, Apr., 12-17 Centralized AMA (CAMA), Jan., 16, May, 21 maintenance, Aug., 13-15, Nov., 16-21 testing, Nov., 10-15 transmission operations, Jan., 27-29 Centrex, May, 2 Ceramic substrates, Mar., 25-29 Channel units, Mar., 8, Apr., 3, Aug., 2 Channeling photodiode, Mar., 15-19 Chip produces more speech for the bit, Aug., 1-3 Chow, Tsun S., Multimodule and local toll-the evolution continues, Jan., 13-19 Cieslak, Thomas J., 5ESS™ switch maintenance: building on the basics, Nov., 18-19 Circuit Maintenance System (CMS-3A), May, 8-12 Circuit Switched Digital Capability (CSDC), Jan., 1, Feb.,

Cleaved coupled-cavity (C3) laser, Jan., 5, 8-9, Mar.,

21, 23-25

Closures, Feb., 12-16

14-16

CMOS (complementary-metal-oxide-semiconductor) evolution continues, Jan., 13-19 circuits, Apr., 7, 10 DBGEN (data-base generator), Apr., 28-30 DCN (Data Communications Network), Aug., 16-17 CMS-3A (Circuit Maintenance System-3A), May, 8-12 Color graphics terminals, Nov., 3. 16-21 DDD (Direct Distance Dialing), Aug., 17-19, 23 Common Channel Interoffice Signaling (CCIS), Aug., 9, Decoder, NAPLPS, Nov., 3 18-22 Detectors, lightwave systems, Jan., 10-11, Mar., 13-19 Communications DFI (digital-facility interface), Aug., 11 module, 5ESS switch, Jan., 13-19, Aug., 11-14 Diagnostics, computer, Apr., 15-17 science research, Nov., 22-26 Digital Compatible peripherals, 3B computers, Apr., 18 Access and Cross-connect System (DACS), Jan., 27, Complementary-metal-oxide-semiconductor (CMOS) May, 1-3, Nov., 10 circuits, Apr., 7, 10 carrier channel units, D3 and D4, Aug., 2 Computer circuit connection and maintenance, May, 1, 3 aided design (CAD), Apr., 7-11 circuits, remote testing, Nov., 10-14 AT&T announces 3B family, Mar., 1-2, Apr., 12-20 facilities, remote switching, Aug., 10-15 (Also see 3B computers.) facility interface (DFI), Aug., 11 log-in delays, Mar., 20-24 Line Interface (DLI) of BCM32000, Aug., 5-8 maintenance, 3B20D, Nov., 16-21 signals, Jan., 3 System for Mainframe Operations (COSMOS), Apr., speech, Aug., 1-3 switching, rural areas, Aug., 10-15 CONCEPS operating system, May, 16-17 technology, Mar., 4-11 Conduction band, Mar., 14-17 Television Lightwave System (DTLS), Jan., 7, Mar., 5-9 Contaminants, Feb., 12-16 transmission, loop, Feb., 21-25 Digital carrier system retrofits easily, doubles channel Corrosion, Feb., 14-16 COSMOS (Computer System for Mainframe Operations), capacity, Jan., 3 Digital-analog circuit, Feb., 22 Apr., 30, 33 COT (central office terminal) bank, Apr., 3 Digitally encoded speech, Aug., 1-3 Coupler-modulator waveguide device, Jan., 11-12 Dimension® PBX systems, at the Olympics, Mar., 10 CPU (central processing unit), for 3B computers, Apr., Dimension System 85, in cellular system, Apr., 1 Direct Distance Dialing (DDD), Aug., 17-19, 23 CSDC (Circuit Switched Digital Capability), Jan., 1, Feb., Direct-memory access (DMA), Apr., 17 21, 23-25 Directory Assistance System/Computer (DAS/C), May. 29 Distributed architecture D3 and D4 digital carrier channel units, Aug., 2 3B computers, Apr., 16 D4 channel banks, Mar., 8, 29, Aug., 4 5ESS switch, Apr., 30, Aug., 12-13 D5 channel banks, Jan., 28, Mar., 29 cellular systems, Apr., 2 DACS (Digital Access and Cross-connect System), Jan., data base, Apr., 29-33 27-29, May, 1-3, Nov., 10 Division of revenue data, Jan., 18 DACS Planning and Engineering Tool (DACSPET), May DLI (Digital Line Interface), BCM32000, Aug., 5-8 DLI (dual-link interface), 5ESS switch, Aug., 11 1, 3 DACSPET (DACS Planning and Engineering Tool), May DMA (direct-memory access), Apr., 17 DMERT (Duplex Multi-Environment Real-Time) DACSPET saves connect time, May, 1, 3 operating system, Feb., 18, 20, Apr., 3 DMERT Generic 2, Apr., 3 Dailey, Mark A., 'Big city' switching arrives in small DNA, Nov., 4, 8 towns, Aug., 10-15 DNHR (Dynamic Nonhierarchical Routing), Aug., 18-26 DAS/C (Directory Assistance System/Computer), May, 29 Documentation system, Aug., 1-3 Domino-circuit design, Apr., 10 Data base architecture, Apr., 29-33 DRAM (dynamic random access memory), Apr., 12-15 base generator (DBGEN), Apr., 28-30 Drop legs, Mar., 6-8 DS-0 and DS-1 facilities, May, 1 Communications Network (DCN), Aug., 16-17 DS1 digital line, Aug., 4-8 ODL™ 200 and ODL 50 lightwave link, Nov., 1 transmission, loop systems, Feb., 21-25 DTLS (Digital Television Lightwave System), Jan., 7, DATAKIT™ Virtual Circuit Switch (VCS), Feb., 3, Nov., 1 Mar., 5-9 Dual-link interface (DLI), Aug., 11 Davis, William R., Multimodule and local toll—the

Duerr, Randolph S., Multimodule and local toll-the evolution continues, Jan., 13-19 Duplex Multi-Environment Real-Time (DMERT) operating system, Feb., 18, 20, Apr., 3 Dvorak, Wes, The evolution of a mighty micro, Apr., 4-11 Dynamic Nonhierarchical Routing (DNHR), Aug., 18-26 Dynamic random access memory (DRAM), Apr., 12-15 E **EADAS** (Engineering and Administration Data Acquisition System), Jan., 18, May, 24 EADAS/NM (Engineering and Administration Data Acquisition System for Network Management), Jan., 18, May, 24 EC32000 echo canceller, Aug., 6 Echo cancelling, EC32000, Aug., 6 Echo Return Loss Enhancement (ERLE) of EC32000, Aug., 6 Eldredge, Gary P., Meet AT&T's 3B computer family, Apr., 12-20 Electron trap, Aug., 3 Electronic mail, Mar., 5, 8-10 Electronic Messaging System (EMS), Mar., 8-10, Apr., 17 Emergency calls, Aug., 13 EMS (Electronic Messaging System), Mar., 8-10, Apr., 17 Encoding standard, Aug., 8 Energy band diagram, Mar., 16-18 band gap, Mar., 13-19 bands, Mar., 13-19 Engineering and Administration Data Acquisition System (EADAS), Jan., 18, May, 24 and Administration Data Acquisition System for Network Management (EADAS/NM), Jan., 18, May, 24 energy-band gap, Mar., 13-19 Equal access, Jan., 18-19 Erickson, James M. Money in the memory bank, May, 18-25 Multimodule and local toll—the evolution continues. Jan., 13-19 ERLE (Echo Return Loss Enhancement) of EC32000, ESS switches, data-base administration, Apr., 26-33 External Data Link Communications Package (EDLCP), May, 18 F- and G-type in-band signaling units, Aug., 2 Maintenance Administration System (FMAS), Jan., 10

Maintenance and Administration Center (FMAC),

interface unit (FIU), Aug., 11, 13

Fastest chip on the block, Nov., 2

Jan., 28

Fault-tolerant computer, Apr., 12, 15-17 Feature cards, AT&T 3B computers, Apr., 13 Fellows, AT&T Bell Laboratories, Mar., 30 Feuster, I. Reed, Speeding up the 'service' in special services circuits, May, 8-12 Fiber links, remote switching, Aug., 10-11 optics, distance record, Mar., 13-15, Nov., 3 optics, holograms, Apr., 1,2 production, Feb., 4-11 ring, Mar., 5-8 systems, Jan., 4-12, Mar., 5-8 Fiber-SLC® carrier system, Jan., 7, May, 13 Fireball, plasma-enhanced MCVD, Feb., 4-11 FIU (facility-interface unit), Aug., 11, 13 Fleming, James W., Plasma fireball process speeds lightguide fiber production, Feb., 4-11 FMAC (Facility Maintenance and Administration Center), Jan., 28 Frame Control Center, Jan., 28 Fraud attempts, blue box, Apr., 3 Frequency selective filters, Mar., 29 Frequency Selective Ringing (FSR), Apr., 3 Friedel, Henry N., Centralizing transmission operations for the central office, Jan., 27-29 FSR (Frequency Selective Ringing) service, Apr., 3 FT3 system, Jan., 5-7 FT3C lightwave lines, Mar., 5-8 FT3C system, Jan., 5-7, 10, 12 FT4E-432 lightwave system, Jan., 7, 9 FTX-180 lightwave system, Mar., 29 Fuhrer, Phillip T., Data-base administration for the 5ESS™ switch: flexible, simple, Apr., 26-33

G Gallium arsenide technology, Mar., 13-19, Nov., 2 1BT1(2), for Traffic Service Position System 1B (TSPS 1B), Apr., 3 2, DMERT (Duplex Multi-Environment Real-Time). operating system, Apr., 3 2PC2, SARTS, Nov., 10-15 3PC1, SARTS, Nov., 15 Get ready, small cities, for high-quality mobile-phone service, Apr., 1 Gibbons, Joseph R., Money in the memory bank, May, 18-25

Glazed thick-film circuits, Mar., 25-29 Graded-base transistor, Mar., 18-19 Graded-gap avalanche photodiode, Mar., 14-19 Grzelakowski, Maureen E., Meet AT&T's 3B computer family, Apr., 12-20

HCAP (Hierarchical Circuit Analysis Program), Apr., 9

Helsing, David V., Reach out and test something special, Nov., 10-14 LAOOC (Los Angeles Olympic Organizing Committee), Hierarchical Circuit Analysis Program (HCAP), Apr., 9 Mar., 5, 10 Hierarchical network, Aug., 18-22 Lasers, Jan., 5-12, Feb., 1-3, Mar., 14-16, Nov., 3 Hitless access, May, 2 LASS (Local Area Signaling Service), Aug., 9 Holograms, Apr., 1-2 LATA (Local Access and Transport Area), Apr., 3 Holographic interferometry, Apr., 1-2 Lightguide production, Jan., 8, Feb., 4-11 Host collector (HOC), May, 19, 21 Lightwave Host switch, Aug., 10-15 communications system, Jan., 4-12, Mar., 4-11 Host switching module, Aug., 10-15 detectors, Jan., 10-11, Mar., 13-19 Housings, outdoor, Feb., 12-16 distance record, Mar., 13-15, Nov., 3 Hybrid integrated circuits (ICs), Feb., 23, Mar., 25-29 ODL™ 200 and ODL 50 data link, Nov., 1 SLC-24 system cutover, Mar., 3 systems, Jan., 4-12, Mar., 13-19 Iannino, Anthony, Keeping log-ins from lagging, Mar., technology, Mar., 4-11 20-24 Lineage™ 2000 MCS power plant, Feb., 1 Image capture board, Nov., 3 LM 23 lightwave multiplexer, May, 13 In-band signaling units, Aug., 2 Local Instructional Workbench™ software, Apr., 20 Access and Transport Areas (LATAs), Apr., 3 Integrated area network, Mar., 1-2, Apr., 12, 16-20, Nov., 1 circuits, hybrid, Feb., 23, Mar., 25-29 Area Signaling Service (LASS), Aug., 9 circuits, VLSI, Apr., 4-11 calls, remote switching, Aug., 10-13 Routing Assignment System (IRAS), Aug., 26 channels, May, 3 Special Services Network (ISSN), Aug., 4 loop, lightwave system, May, 13 Interactive testing in the loop, Aug., 16-17 test desks (LTD) eliminated, Aug., 16-17 Intercom dialing, May, 2 Local lightwave system carries seven times more Interface microchip, Apr., 5, 7, 10, 13-15 information, May, 13 Interferometry, holographic, Apr., 1-2 Local/toll 5ESS switch, Jan., 13-19 International Logic to XY mask (LTX2), Apr., 9 Telegraph and Telephone Consultative Committee Long-haul channels, May, 3 (CCITT), Aug., 8 Loop Testing System (LTS), Aug., 16-17 video teleconferencing, May, 3 Loop, remote testing of, Nov., 10-14 Ionization rates, Mar., 14-19 Los Angeles Olympic Organizing Committee (LAOOC), IRAS (Integrated Routing Assignment System), Aug., 26 Mar., 5, 10 ISSN (Integrated Special Services Network), Aug., 4 LT-2 transmultiplexer, Mar., 29, May, 2 LTD (local test desk) eliminated, Aug., 16-17 LTS (Loop Testing System), Aug., 16-17 J99343TM facility-terminal test set, Aug., 2 LTX2 (logic to XY mask), Apr., 9 J99343TN test set replaced, Aug., 2 Lucky, Robert W., Communications sciences research: a James, Jack W., Beefing up the processing power of the microcosm of AT&T Bell Laboratories, Nov., 22-26 4ESS™ switching system, Feb., 17-20 Jelinski, Lynn W., Exploring the mysteries of macromolecules, Nov., 4-9 Machine-Detected Interoffice Irregularities (MDII), Jan., Julesz, Bela, The texton theory of vision sheds light on how we see, May, 4-7 Macro commands, Nov., 12-13 Macromolecules, Nov., 4-9 K Magnet, superconducting, Nov., 5-7

Maintenance

NSCS, Jan., 20-26

3B20D computers, Nov., 16-21

5ESS switch, Aug., 10, 13-15, Nov., 18-19

centers (MC) using MLT-2, Aug., 16-17

Control Center (MCC), Aug., 15, Nov., 16-21

and Analysis Plan for Special services (MAPSS), May,

Kilogauss, Nov., 6, 9

system, May, 14-17

thick and thin, Mar., 25-29

evolution continues, Jan., 13-19

Klockow, Dennis H., Expanding hybrid circuits through

Koffman, Kenneth J., Multimodule and local toll-the

Kowalski, Thaddeus J., SYMBIOTE-Expanding the

real-time capabilities of the UNIX™ operating

remote switching, Aug., 10, 13-15 switching network, Jan., 27-29, Nov., 16-21 Manhattan lightwave systems, Jan., 6-7 Mapping, data base, Apr., 28-33 MAPSS (Maintenance and Analysis Plan for Special Services), May, 8-12 Marques, Manuel, Beefing up the processing power of the 4ESS™ switching system, Feb., 17-20 Marsh, Anita B., 3B20D computer: maintenance with a mind of its own, Nov., 16-21 Masks, data entry, Apr., 30-33 Masks, photoresist, Mar., 26, Apr., 6, 11 Master Control Center/Read-Only Printer (MCC/ROP), May. 24 MBE (molecular-beam epitaxy), Mar., 13-19 MC (maintenance center), Aug., 16-17 MCC (Maintenance Control Center), Aug., 15, Nov., 16-21 MCC/ROP (Master Control Center/Read-Only Printer), May, 24 MCVD (Modified Chemical Vapor Deposition), Jan., 8, Feb., 4-11 MDII (Machine-Detected Interoffice Irregularities), Jan., 22-26 MECCA (Mechanization of Call Completion Anomalies), May, 25 Mechanization of Call Completion Anomalies (MECCA), May, 25 Mechanized Loop Testing System (MLT-2), Aug., 16-17 Memory capacity, 3B computers, Apr., 12-15, 19 management unit (MMU), Apr., 5, 7, 10, 13-15 Meola, Kenneth D., Tracking troubles in the switching network, Jan., 20-26 Merrimack Valley, Mar., 25-29, Apr., 37 Message Investigation System (MIS), Mar., 1 Message Telecommunications Service (MTS), Jan., 7 Metal-oxide-semiconductor timing simulator (MOTIS), Apr., 8 Metallic facility terminal (MFT) units, Feb., 21, 25, Aug., 2 MFT (metallic facility terminal) units, Feb., 21, 25, Aug., 2 Miami lightwave system, Jan., 6-7 Microelectronics 256K DRAM, Apr., 13-15 evolution of, Apr., 7 interface chip for WE® 32100 microprocessor, Apr., 5, 7, 10, 13-15 manufacturing processes, Mar., 25-29, Apr., 4-11 memory management unit, Apr., 5, 7, 10, 13-15 photoresist masks, Mar., 26, Apr., 6, 11 technology, Mar., 4-11 updatable design, Apr., 10-11 WE 32000 microprocessor, Apr., 7 WE 32100 microprocessor, Apr., 4-15

WE 4000 microcomputer, Apr., 7 WE 8000 microprocessor, Apr., 7 X.25 Protocol Controller, Apr., 14, 15, 17 Microsoft, Inc., Apr., 12,13 MIS (Message Investigation System), Mar., 1 MLT-2: advanced system for interactive loop testing, Aug., 16-17 MMU (memory management unit) microchip, Apr., 5, 7, 10, 13-15 Mobile phone, AT&T, Nov., 2 phone service, Apr., 1-2, Nov., 2 radio, at the Olympics, Mar., 5, 8 Mocenigo, John M., Managing a network that won't sit still, Aug., 23-26 Modified Chemical Vapor Deposition (MCVD) process, Jan., 8, Feb., 4-11 Modular architecture, 5ESS switch, Aug., 12-13 Moffatt, George T., The texton theory of vision sheds light on how we see, May, 4-7 Molecular-beam epitaxy (MBE), Mar., 13-19 Monomers, Nov., 8 MOS timing simulator (MOTIS), Apr., 8 Moscoso, Paul, Data-base administration for the 5ESS™ switch: flexible, simple, Apr., 26-33 MOTIS (metal-oxide-semiconductor timing simulator), Apr., 8 MPLPC (multipulse linear predictive coding) algorithm, Aug., 3 Multiframe offices, May, 3 Multilayer semiconductors, Mar., 13-19, Apr. 10-11 Multimode optical fiber, Jan., 4-12 Multimodule 5ESS switch, Jan., 13-19 Multiplexing bit compression, Aug., 4-8 lightwave, Jan., 4-12 sound and picture, Mar., 7 time compression, Feb., 21-25 Multipulse linear predictive coding (MPLPC) algorithm, Aug., 3 Mummert, Vernon S., AT&T carves new routes in its nationwide network, Aug., 18-22 Murrel, Sharon L., SYMBIOTE-Expanding the realtime capabilities of the UNIXTM operating system. May, 14-17 MX3C Lightwave Terminating Frame (LTF), Jan., 10

N-type aerial cable terminal, Feb., 12-16 NAC (Network Administration Center), May, 24 NAPLPS decoder, Nov., 3 National Academy of Engineering (NAE) awards, Apr., 34 reference frequency, May, 18 Society of Professional Engineers (NSPE) awards, Feb., 2

NCT (network-control-and-timing) format, Aug., 11 Data Administration (ODA) system, Apr., 26, 30-32 NEMOS (Network Management Operations Support) Data Integrity system, Apr., 32 system, for DNHR network, Aug., 24-26 dependent data (ODD), Apr., 26-33 Network toll switching, Jan., 16, 18, 19, 22, Feb., 17-20, Apr., 3, Administration Center (NAC), May, 24 May, 24, August, 18-26 at the Olympics, Mar., 4-11 Olympics, Jan., 7, Apr., 16-17 control and timing (NCT), Aug., 11 Operating speed, 3B computers, Apr., 12-15, 19 controls, 5ESS switch, May, 18-25 Operating systems, May, 14-17 (Also see UNIX operating local area, Apr., 12, 17-20, Nov., 1 management, Jan., 16-18 Operator Keved Trouble Report System, TSPS, Apr., 3 Management Operations Support (NEMOS) system, Optical fibers, Jan., 5, 7-10, 12, Feb., 4-11, Mar., 13-19, Aug., 24-26 Apr., 1, 2, May, 13 Operations Center System, Aug., 24-26 Outdoor enclosures, Feb., 12-16 Operations Center (NOC), Aug., 23-26 Outside telephone equipment, Feb., 12-16 Operations Trouble Information System (NOTIS), Jan., 22 Service Center System (NSCS), Jan., 20-26 service quality measurements, May, 18-25 Packet switching, Nov., 1 Pair Gain Test Controller (PGTC), Apr., 3 Services Complex (NSC), Feb., 18-19 Terminal Equipment Center (NTEC), Jan., 27-29 Pannone, Louis V., Reach out and test something special, Terminal Equipment Location (NTEL), Jan., 29 Nov., 10-14 New generic keeps pace with technology and divestiture, Paperless message system, Mar., 8-10 Apr., 3 Party lines, ringing, Apr., 3 NMR (nuclear magnetic resonance), Nov., 4-9 Passive components, hybrid ICs, Mar., 27-29 No. 1 PC, Nov., 15 Patel, C. Kumar N., Physics research: seeking No. 2 PC, Nov., 15 tomorrow's technologies, Apr., 21-25 No. 2 Service Evaluation System (SES), Jan., 18-19 PC (personal computer), Mar., 1-2, Apr., 12, 17-20 No. 2 SES, Jan., 18-19 PC (process controller), SARTS, Nov., 10-15 No. 3 PC, Nov., 15 PC Interface, Mar., 1-2, Apr., 12, 17-20 Noise Pedestal closure, Feb., 12-13 photodetectors, Mar., 14-19 Performance measurements, 5ESS switch, May, 18-25 semiconductor chips, Aug., 3 Peripherals, 3B computers, Apr., 18 Northeast Corridor Project, Jan., 6 Personal computer (PC), Mar., 1-2, Apr., 12, 17-20 **NOTIS (Network Operations Trouble Information** PGTC (Pair Gain Test Controller), Apr., 3 System), Jan., 22 Photodetectors, Mar., 13-19 NSC (Network Services Complex), Feb., 18-19 Photomultiplier, Mar., 16-19 NSCS (Network Service Center System), Jan., 20-26 Photonic systems, Jan., 4-12 NSPE (National Society of Professional Engineers) Photoresist circuit masks, Mar., 26, Apr., 6, 11 awards, Feb., 2 Physics research, Mar., 13-19, Apr., 21-25 NTEC (Network Terminal Equipment Center), Jan., 27-29 Pipelining, microchips, Apr., 4 Pittsburgh-Greensburg lightwave project, Jan., 6 NTEL (Network Terminal Equipment Location), Jan., 29 Nuclear magnetic resonance (NMR) spectroscopy, Nov., PLA (programmable logic array), Apr., 9 Planning, equipment provisioning, May, 3 4-9 Plasma-Enhanced Modified Chemical Vapor Deposition o (PMCVD), Feb., 4-11 O'Connor, Paul B., Plasma fireball process speeds Plastics, housings, Feb., 12-16 lightquide fiber production, Feb., 4-11 PMCVD (Plasma-Enhanced Modified Chemical Vapor ODA (Office Data Admininstration) system, Apr., 26, Deposition), Feb., 4-11 PMU (precision measurement unit), Aug., 17 30-32 ODD (office-dependent data), Apr., 26-33 pn junction, Mar., 13-19 ODL 200 and ODL 50 lightwave data link, Nov., 1 Polyethylene, Nov., 4, 6-9 Polymers, Nov., 4-9

automation, 3B computer family, April, 12-20 central switching, Jan., 1, 3, 7, 13, 18, 21, 25-29, Feb.,

10-17

21-25, Apr., 2, 26-33, May, 1, 3, 13, 18-25, Aug., 2,

Polyvinyl chloride (PVC), Nov., 7-8

Pre-service tests, Nov., 12-13

Power failures, computers, Apr., 12-16

Precision measurement unit (PMU), Aug., 17

Apr., 12-20

Process controller (PC), Nov., 10-15

26, 28, 32-33, May, 3

Programmable logic array (PLA), Apr., 9 Provisioning special services circuits, Aug., 2 PVC (polyvinyl chloride), Nov., 7-8 Quality SARTS, Nov., 13-14 TAT-8 testing, Feb., 1-2 R Radeschi, David C., Centralizing transmission operations for the central office, Jan., 27-29 Radeschi, David I., Speeding up the 'service' in special services circuits, May, 8-12 Raju, V. Reddy, Plasma fireball process speeds lightquide fiber production, Feb., 4-11 Rate Change and Control (RCC) circuit, Feb., 23 Rate Schedule Expansion (RSE), Apr., 3 RCV (Recent Change and Verify) system, Apr., 26, 30-33 Real time operating systems, Apr., 16, May, 16-17 (Also see UNIX operating system.) reliable (RTR), UNIX system, Apr., 16 (Also see DMERT operating system) Recent Change and Verify (RCV) system, Apr., 26, 30-33 Reed, Warner A., SARTS 3PC1: providing remote testing for the small network, Nov., 15 Regenerator circuit, Feb., 23 Reliability, SARTS, Nov., 10-14 Memory Access System (RMAS), May, 3 Memory Administration Center (RMAC), Apr., 32 Memory Administration System (RMAS), Apr., 26, 28, switching module (RSM), Jan., 14, 19, May, 1, Aug., 10-15 terminal (RT) bank, Apr., 3 test system (RTS), Nov., 10-15 Repeaters, Jan., 9 Research, AT&T Bell Laboratories, Mar., 13-19, Apr., 21-25, Nov., 4-9, 22-26 Single Resist polymers, Nov., 9 Resistor films, Mar., 25-29 Resistors, trimming lines, Mar., 25-29 Restartability, microchips, Apr., 4 Revenue Accounting Office (RAO), May, 19, 23 RMAC (Remote Memory Administration Center), Apr., 32 RMAS (Remote Memory Administration System), Apr.,

Prestinario, Jerry A., Meet AT&T's 3B computer family,

RNA, Nov., 8
RSM (remote switching module), Jan., 14, 19, May, 1,
Aug., 10-15
RT (remote terminal) bank, Apr., 3
RTR (real-time reliable), UNIX system, Apr., 16
RTS (remote test system), Nov., 10-15
Rubin, Philip E., Wideband window to the Information
Age, Jan., 4-12

Saad, Michael W., Money in the memory bank, May, Salmon, Ruth L., Keeping log-ins from lagging, Mar., 20 - 24San Antonio, Texas, Apr., 3 Sand, Linda L., Money in the memory bank, May, 18-25 SARTS (Switched Access Remote Test System), May, 8-12, Nov., 10-15 SARTS 3PC1: providing remote testing for the small network, Nov., 15 SCC (Switching Control Center), Jan., 26, 28, Apr., 32-33, Nov., 16-21 SCCS (Switching Control Center System), Jan., 22, May, 22 Schawlow, Arthur, Feb., 2 Scholarship program, Mar., 3 Schreiner, Philip A., 'Big city' switching arrives in small towns, Aug., 10-15 Schroeder, Paul S., Centralizing transmission operations for the central office, Jan., 27-29 SDHT (selectively doped heterostructure transistor), Nov., 2 Selectively doped heterostructure transistor (SDHT), Nov., 2 Semiconductors, Mar., 13-19, Apr., 10, 11, Nov., 2 Service evaluation system (SES), Jan., 26, May, 24 Service evaluation, Jan., 18-19 Shannon, Patrick A., 3B20D computer: maintenance with a mind of its own, Nov., 16-21 Sharing computer resources, Apr., 12, 17-20 Shockley, William, Feb., 2 Signaling irregularity calls, Apr., 3 Signaling units, Aug., 2 Signals, data, voice, and video, Mar., 5-8 Simulators, Nov., 14 mode fiber, Jan., 4-12, Nov., 1 module 5ESS switch, Jan., 13-14 party channel units, Apr., 3 SKYNET® Satellite Service, Aug., 5 SLC-24 carrier system, first cutover, Mar., 3 SLC-5 carrier systems, Mar., 29 SLC-96 carrier system, Jan., 14, 19, Mar., 29, Apr., 3 SLC-96 carrier system rings party-line phones, Apr., 3 SMAS (Switched Maintenance Access System), Nov., 10

Smith, Arnold D., Designing for the environment, Feb., Software system simplifies documentation process and TAT-8, contract awarded, Jan., 3 reduces costs, Aug., 1-3 T carrier, Jan., 3, Nov., 11 Software, Mar., 4-11, Apr., 13, Aug., 1-3, Nov., 13-15 T1 carrier format, Aug., 11 Soliton laser, Feb., 1-2 T1 facilities, remote switching, May, 1, Aug., 10-15 Space-division switching, Aug., 11-14 T1C cables, Jan., 3 Sparrell, Duncan K., Taking a big bite out of bits, Aug., 4-8 T1G digital carrier system, Jan., 3 Tantalum nitride resistors, Mar., 26 Service Center (SSC), Jan., 28, May, 8-12, Nov., 10-15 Technology services circuits, automating data with CMS-3A, May, at the Olympics, Mar., 4-11 8-12 films, hybrid circuits, Mar., 25-29 services circuits, demand, Jan., 27-29, Nov., 10-12 transfer, Apr., 23-25 services circuits, provisioning, Aug., 2 twin-tub, Apr., 10 services circuits, testing, Nov., 10-15 Telecommunications services, at the Olympics, Mar., 4, 8 Alarm Surveillance and Control (TASC) system, Spectroscopy, Nov., 4-9 Jan., 10 Speech synthesizer chip, Aug., 1-3 system, at the Olympics, Mar., 10-11 Speed, 3B computers, Apr., 12-15, 19 Teleconferencing, video, Feb., 24-25, May, 3 Spotsylvania, Virginia, May, 1, Aug., 10-11 Teleprocessing, Automatic Message Accounting, Jan., Sputtering, Mar., 26 15-16, May, 18-25 Srinivas, Tanjore K., Reach out and test something Teletype® 5410 terminal, Mar., 8, Apr., 13 special, Nov., 10-14 Teletype 5620 terminal, Jan., 2, Apr., 5, 13 SSC (Special Service Center), Jan., 28, May, 8-12, Nov., Teletype T300 and Model 43 printers, Mar., 8, Apr., 13 10-15 Television, at Olympics, Mar., 4-8 Staircase photodiode, Mar., 15-19 Telstar, Feb., 2 Stanaway, John J., Jr., 'Big city' switching arrives in Temporary network, Mar., 4-11 small towns, Aug., 10-15 **Terminals** Stand-alone mode, remote switching, Aug., 10-15 aerial cable, Feb., 12-16 Succasunna, New Jersey, Apr., 17 video-display, Mar., 8-10, Nov., 10-15 Superconducting magnet, Nov., 5-7 Test set saves time and money, Aug., 2 Superlattice photodiode, Mar., 15-19 Sweets, Ellen A., Technology of the Olympics—'the 24th automated, Nov., 12-13 event'TM, Mar., 4-11 pre-service, Nov., 12-13 Switched Access Remote Test System (SARTS), May, 8remote, Aug., 10, 13-15, Nov., 10-15 12, Nov., 10-15 simulators, Nov., 14 Switched Maintenance Access System (SMAS), Nov., 10 special services circuits, Nov., 10-15 Text manager software system, Aug., 1-3 Switching cellular service, Apr., 1 Texton theory of vision, May, 4-7 Thermosonic bonding, Mar., 26 Control Center (SCC), Jan., 26, 28, Apr., 32-33, Nov., 16-21 Thick-film technology, hybrid circuits, Mar., 25-29 Thin-film technology, hybrid circuits, Mar., 25-29 Control Center System (SCCS), Jan., 22, May, 24 maintenance, 5ESS switch, Nov., 16-21 Thomas, David W., SARTS 3PC1: providing remote testing for the small network, Nov., 15 module, 5ESS switch, Jan., 13-19, May, 1, Aug., 10-15 network, tracking troubles, Jan., 27-29 Thomas, Gerald H., 'Big city' switching arrives in small towns, Aug., 10-15 offices, central, Jan., 1, 3, 7, 13, 18, 21, 25-29, Feb., 21-25, Apr. 2, 26-33, May, 1, 3, 13, 18-25, Aug., 2, 10-17 Three-way calling, May, 2 offices, toll, Jan., 16, 18-19, 22, Feb., 17-20, Apr. 3, Time compression multiplexing (TCM), Feb., 21-25 May, 24, Aug., 18-26 optical, Jan., 11, 12 division switching, Aug., 11-14 multiplex switch (TMS), Aug., 11-14 space division, Aug., 11-14 slot interchanger (TSI), Aug., 11-14 system network, Jan., 16 Tiny transistor tunes in to the sound of an electron, time division, Aug., 11-14 Aug., 3 SYMBIOTE operating system, May, 14-17 TIRKS (Trunks Integrated Records Keeping System), System 1000, AT&T cellular telephone, Nov., 2

System V, Apr., 4, 12-20

Apr., 30, 33, May, 8-12

TMS (time-multiplex switch), Aug., 11-14 Toll network, routing, Jan., 16, Aug., 18-22 Toll switching office, Jan., 16, 18-19, 22, Feb., 17-20, Apr., 3, May, 24, Aug., 18-26 Toll trunking, Jan., 16 Townes, Charles H., Feb., 2 Tracking troubles in the switching network, Jan., 27-29 Traffic Data Collection System, Feb., 18-19 data, May, 18-25, Nov., 13 patterns, May, 3 Service Position System 1B (TSPS 1B), Apr., 3 Transistor, Mar., 18-19, 27, Apr., 10, 17, Aug., 3, Nov., 2 Transmission Equipment DIPs (TEDs), Mar., 25-29 operations, centralizing, Jan., 27-29 Transmultiplexer, LT-2, Mar., 29, May, 2 Trimming, resistors, Mar., 25-29 Trunks Integrated Records Keeping System (TIRKS), Apr., 30, 33, May, 8-12 Tsang, Won-Tien, New, quieter photodiodes promise to catch speeding lightwaves, Mar., 13-19 TSI (time-slot interchanger), Aug., 11-14 TSPS 1B (Traffic Service Position System 1B), Apr., 3 Twenty-third Olympiad, Mar., 4-11 Twin-tub technology, Apr., 10

U

UNIX operating system and 3B computers, Jan., 26, Mar., 8, Apr., 4, 12-20 and 5620 terminal, Jan., 2 and SARTS, Nov., 14 and Text Manager, Aug., 1-3 real-time capabilities, May, 14-17 real-time reliable (RTR) operating system, Apr., 16 System V, Apr., 4, 12-20 Updatable design, microchips, Apr., 10-11 Usage data, SARTS, Nov., 13

٧

Vacuum tubes, Mar., 27 Valence band, Mar., 14-17 VCS (Virtual Circuit Switch), Nov., 1 VDTs (video-display terminals), Mar., 8-10, Nov., 10-15 Very-large-scale-integrated (VLSI) circuits, Mar., 10, Apr., 4-11 Victor, John J., 5ESS™ switch maintenance: building on the basics, Nov., 18-19 Video display adapter, Nov., 3 AT&T PC NAPLPS decoder, Nov., 3 image capture board, Nov., 3 terminals (VDTs), Mar., 8-10, Nov., 10-15 Video teleconferencing, Feb., 24-25, May, 3 Video teleconferencing spans the Atlantic, May, 3 Videotex, Jan., 12 Virtual Circuit Switch (VCS), Nov., 1 Vision of the Future is free for the asking, Mar., 3 Vision, May, 4-7 VLSI (very-large-scale-integrated) circuits, Mar., 10, Apr., 4-11 Voice communications, Feb., 21-25, Mar., 4-11

W

Warner, Jack C., 5ESS™ switch maintenance: building on the basics, Nov., 18-19
Wavelength-division multiplexing, Jan., 7
WE 32000 microprocessor, Apr., 4-17
WE 32100 microprocessor, Apr., 4-17
WE 4000 microcomputer, Apr. 7
WE 8000 microprocessor, Apr., 7, May, 13, Aug., 17
Wenning, Elizabeth C., Tracking troubles in the switching network, Jan., 20-26
Wood, Patrick H., Keeping log-ins from lagging, Mar., 20-24
WP33, WP34, WP35 channel units, Apr., 3
Writer's Workbench™ software, Apr., 20, Aug., 3

X

X.25 Protocol Controller (XPC), Apr., 14-15, 17 Xerox Corporation, Apr., 12 XPC (X.25 Protocol Controller) chip, Apr., 14-15, 17

Z

Zapata, Ricardo N., Centralizing transmission operations for the central office, Jan., 27-29

